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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/719,347

11/21/2003

David Shortt

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EXAMINER

MALEVIC, DJURA

ART UNIT

PAPER NUMBER

2884

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<p align="center">Office Action Summary</p>	Application No. 10/719,347	Applicant(s) SHORTT ET AL.	
	Examiner Djura Malevic	Art Unit 2884	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11/21/2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/08/2007 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 – 3, 5 – 18, and 20 – 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nikoonahad et al. (US Pub. No. 2002/0093648 A1) in view of Some et al. (US Pub. No. 2002/0109110 A1).

With regards to claim 1, Nikoonahad discloses a method for inspecting a specimen, comprising the steps of directing ultraviolet light to a specimen [0167 – 0168], collecting light scattered from the specimen with a collection channel, detecting light scattered from the specimen at a specific selected wavelength [0167] and detecting features, defects, or light scattering properties of the specimen using signals

representative of the detected light [0014]. Nikoonahad does not expressly disclose detecting light collected by the collection channel with multiple detection channels, wherein the detected light has a selected wavelength range, although Nikoonahad reasonably implies such a configuration (see for example figure 7). Nevertheless, such a configuration is old and well known in the subject matter area of the invention. For example, Some teaches a method for inspecting a specimen comprising collecting scattered light from the specimen with a collection channel and detecting light collected by the collection channel with multiple detection channels [0034](Figure 1), wherein the detected light has multiple selected wavelength ranges. Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify Nikoonahad to further include such a configuration such as that taught by Some in order to detect whether defects exist on said specimen.

With regards to claim 2, Nikoonahad discloses the ultraviolet light comprises nearly monochromatic ultraviolet light [0168].

With regards to claim 3, Nikoonahad discloses detecting reflected light or scattered light from the specimen, thus not detecting fluoresced light in this particular method [0167].

With regards to claim 5, Some discloses methods detecting light with a selected wavelength such that the light fluoresced from the specimen is detected [0033].

With regards to claim 6, Nikoonahad discloses that the wavelength ranges comprises wavelengths shorter than a wavelength of ultraviolet light [0198].

With regards to claim 7, Some discloses the light detected by the multiple detection channels has different selected wavelength ranges [0034].

With regards to claim 8, Some discloses one of the different selected wavelength ranges is selected such that the detected light has a wavelength that is approximately the same as a wavelength of the ultraviolet light (i.e. incident wavelength) [0038], and wherein another of the different selected wavelength ranges is selected such that the detected light comprises light fluoresced from the specimen [0023].

With regards to claim 9, Nikoonahad discloses a plurality of channels comprising a plurality of detectors arranged at different collection angles [0176 – 0177].

With regards to claim 10, Some discloses collecting light scattered from the specimen with an additional collection channel and detecting light collected by the additional collection channel with at least one detection channel, wherein the collection and additional collection channels are arranged at different collection angles, and wherein the light detected by the multiple detection channels has the same selected wavelength range as the light detected by the at least one detection channel [0034].

With regards to claim 11, Nikoonahad discloses detecting reflected light or scattered light from the specimen, thus not detecting fluoresced light in this particular method [0167].

With regards to claim 12, Some discloses methods detecting light with a selected wavelength such that the light fluoresced from the specimen is detected [0023].

With regards to claim 13, Nikoonahad discloses further classifying the features or defects using signals representative of the detected light (Summary of the invention) [0267,0178].

With regards to claim 14, Nikoonahad discloses a method for inspecting a specimen comprising directing ultraviolet light to the specimen, detecting light scattered from the specimen with at least one channel and detecting features, defects, or light scattering properties of the specimen using signals representative of the detected light (See rejection of claim 1). Nikoonahad does not expressly disclose that said at least one channel comprises two or more detectors wherein the two or more detectors has an independently selected wavelength range. Some teaches a method for inspecting a specimen comprising collecting scattered light from the specimen with a collection channel and detecting light collected by the collection channel with multiple detection channels, wherein the detected light has multiple selected wavelength ranges (See rejection of claim 1). Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify Nikoonahad to further include such a configuration such as that taught by Some in order to detect whether defects exists on said specimen.

With regards to claim 15, Nikoonahad discloses further classifying the features or defects using signals representative of the detected light (Summary of the invention) [0267,0178].

With regards to claim 16, Nikoonahad discloses a method for inspecting a specimen comprising directing light having one or more incident wavelengths to the

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specimen, collecting light scattered from the specimen with a collection channel and detecting features, defects, or light scattering properties of the specimen using signals representative of the light (See rejection of claim 1). Nikoonahad does not expressly disclose separately detecting a first portion and a second portion of light collected by the collection channel substantially simultaneously with multiple detection channels, wherein the first portion has a wavelength range selected such that the first portion does not include light fluoresced from the specimen, and wherein the second portion has a wavelength range selected such that the second portion comprises light fluoresced from the specimen. Some teaches multiple detection channels (See figure 1), wherein the first portion has a wavelength range selected such that the first portion does not include light fluoresced from the specimen, and wherein the second portion has a wavelength range selected such that the second portion comprises light fluoresced from the specimen [0023]. Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify Nikoonahad to further include such a configuration such as that taught by Some in order to detect whether defects exists on said specimen.

With regards to claim 17, Nikoonahad discloses incident wavelengths are selected to stimulate fluorescence emission from one or more materials on the specimen [0331].

With regards to claim 18, Nikoonahad discloses that one or more incident wavelengths are ultraviolet wavelengths [0167 –0168].

With regards to claim 20, Nikoonahad discloses separately detecting a third portion of the light collected by the collection channel with the multiple detection

channels, wherein a wavelength range of the third portion is selected to include wavelengths shorter than the one or more incident wavelengths [0042,0331].

With regards to claim 21, Nikoonahad discloses separately detecting a third portion of the light collected by the collection channel with the multiple detection channels, wherein a wavelength range of the third portion is selected such that the third portion comprises light fluoresced from the specimen at a wavelength range different than that of the second [0042,0331].

With regards to claim 22, Nikoonahad discloses classifying the features or detects using an intensity of the first portion, intensity of the second portion, or a combination of the two [0101].

With regards to claim 23, Nikoonahad discloses detecting performed in non-confocal mode [0019].

With regards to claim 24, Nikoonahad discloses the invention may be utilized in darkfield mode [0019].

With regards to claim 25, Nikoonahad discloses an inspection system comprising an illumination subsystem configured to direct ultraviolet light to a specimen [0167 –0168], a collection channel configured to detect light scattered from the specimen having a selected wavelength range [0167], and a processor configured to detect features, defects, or light scattering properties on the specimen using signals that are representative of the detected light [0014]. Nikoonahad does not expressly disclose detecting light collected by the collection channel with multiple detection channels, wherein the detected light has a selected wavelength range, although

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Nikoonahad reasonably implies such a configuration (see for example figure 7).

Nevertheless, such a configuration is old and well known in the subject matter area of the invention. For example, Some teaches a method for inspecting a specimen comprising collecting scattered light from the specimen with a collection channel and detecting light collected by the collection channel with multiple detection channels, wherein the detected light has multiple selected wavelength ranges. Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify Nikoonahad to further include such a configuration such as that taught by Some in order to detect whether defects exists on said specimen.

With regards to claim 26, Nikoonahad modified discloses the inspection system of claim 25 further comprising a plurality of channels arranged at different collection angles [0176 –0177, 184].

With regards to claim 27, Nikoonahad discloses the inspection system of claim 25 further comprising a plurality of channels, wherein the plurality of channels are arranged at the same collection angle [0176 –0177, 184] (See rejection of claim 25).

With regards to claim 28, Nikoonahad discloses the inspection system of claim 25 further comprising a plurality of channels, wherein the plurality of channels comprises different types of detectors [0176 –0177, 184]

With regards to claim 29, Nikoonahad discloses the inspection system of claim 25 further comprising a plurality of channels, wherein the plurality of channels comprises the same types of detectors [0176 – 0177, 184].

With regards to claim 31, Nikoonahad discloses the inspection system of claim 25, wherein the plurality of channels comprises spectral filter wherein, the spectral filter are selected based on one or more materials of the specimen [0170 – 0171, 184].

With regards to claim 32, Nikoonahad discloses detecting reflected light or scattered light from the specimen, thus not detecting fluoresced light [0167].

With regards to claim 33, Nikoonahad discloses the wavelength range is selected such that light fluoresced from the specimen is detected [0331].

With regards to claim 34, Nikoonahad discloses the wavelength range comprises wavelengths that are shorter than a wavelength of the ultraviolet light [0198].

With regards to claim 35, Nikoonahad modified discloses a plurality of channels configured to detect light scattered from the specimen having a various selected wavelength ranges (See rejection of claim 7)

With regards to claim 36, Nikoonahad discloses detecting performed in non-confocal mode [0019].

With regards to claim 37, Nikoonahad discloses the illumination subsystem form a darkfield optical subsystem [0012, 184].

Claims 4, 19 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nikoonahad.

With regards to claim 4 and 19, Nikoonahad discloses the inspecting systems as claimed in claim 1 and 16, but does not expressly disclose detected light scattered from the specimen, wherein the detected light has a wavelength range comprising of wavelengths within about 1nm to about 10nm of the wavelength of the ultraviolet light

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(source). However, it would have been obvious at the time the invention was made to a person of ordinary skill in the art that detecting scattered light from a specimen would always include detected light within a relatively small range of the light source and since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

With regards to claim 30, Nikoonahad discloses the inspection system as claimed in claim 25 but does not expressly disclose two separate channels comprising a bandpass filter, an edge filter or a notch filter. However, Nikoonahad discloses that a plurality of channels may include spectral filters [0170, 184], which is known in the art to include bandpass filters, edge filters and notch filters. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include bandpass filters, edge filters or notch filters, since it is conventionally used in that environment in view of what is well known.

Response to Arguments

Applicant's arguments, see Remarks, filed 01/08/2007 with respect to the rejection(s) of claim(s) 1 -37 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made over Nikoonahad et al. (US Pub. No. 2002/0093648 A1) in view of Some et al. (US Pub. No. 2002/0109110 A1).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Amogy et al. (US Patent 6,914,670 B1) and (US Pub. No. 2003/0058433 A1) teaches detecting scattered light by directing the scattered light with a collection lens, wherein the collected light is detected with multiple detectors (See figure 1).

Takeda et al. (US Patent No. 5,936,726) teaches detecting scattered light by directing the scattered light with a collection lens, wherein the collected light is detected with multiple detectors (See figure 1).

Roth et al. (US Pub. 20050073686 A1) teaches multiple detecting channels (See Figure 1).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Djura Malevic whose telephone number is 571.272.5975. The examiner can normally be reached on Monday - Friday between 8:30am and 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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PRIMARY EXAMINER